Welcome!

Office for State, Tribal, Local and Territorial Support

presents…

CDC *Vital Signs :*
Making Healthcare Safer:
Stopping *Clostridium difficile* Infections

March 13, 2012

2:00 pm – 3:00 pm (EDT)

Agenda

2:00 pm	**Welcome & Introduction**	**Judy Monroe, MD, FAAFP** Director, OSTLTS, CDC
2:02 pm	**Speaker Introductions**	**Amanda D. Miller, MA** Health Communication Specialist McKing Consulting for OSTLTS, CDC
2:04 pm	***Vital Signs* Overview**	**Clifford McDonald, MD** Senior Advisor for Science and Integrity, Division of Healthcare Quality Promotion, CDC
2:10 pm	**Presentations**	**Brian Koll, MD, FACP, FIDSA** Medical Director and Chief of Infection Prevention, Beth Israel Medical Center
		Susanne Salem-Schatz, ScD Program Director and Improvement Advisor, Massachusetts Coalition for the Prevention of Medical Errors
		Chinyere Alu, MPH CDC Public Health Prevention Service Fellow, Division of Patient Safety and Quality, Illinois Department of Public Health
2:30 pm	**Q&A and Discussion**	**Amanda D. Miller**
2:55 pm	**Wrap-up**	**Judy Monroe**
3:00 pm	**End of Call**	




CDC Vitalsigns™ Teleconference to support STLT efforts and build momentum around the monthly release of CDC *Vital Signs*







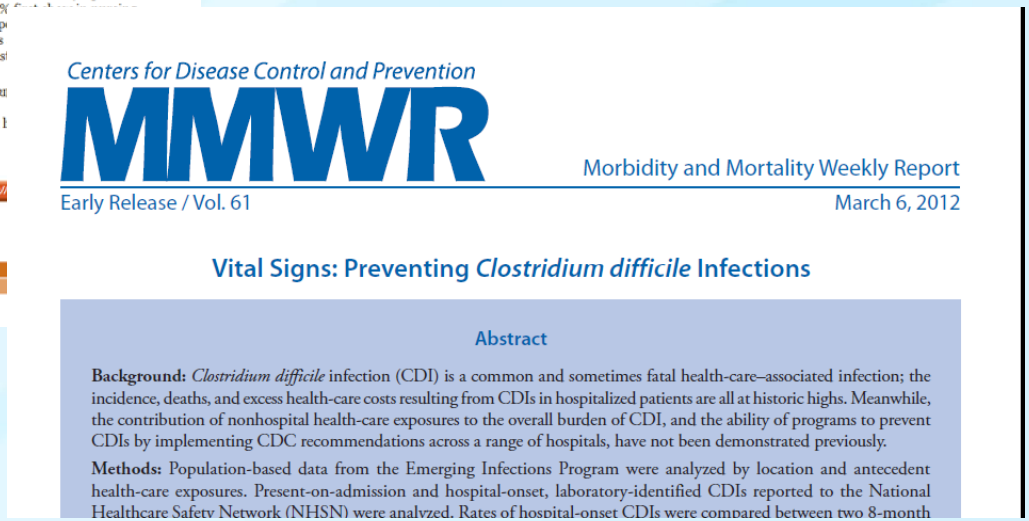
Making Health Care Safer: Stopping *Clostridium difficile* Infections

L. Clifford McDonald, MD, FACP, SHEA
Senior Advisor for Science and Integrity

Town Hall Meeting:
Office for State, Tribal, Local and Territorial Support
March 13, 2012

Overview

- What are *Clostridium difficile* infections?
- Why are they important?
- Where do they occur and role of hospitals?
- How can they be prevented?
- What can be done?



Clostridium difficile and Infection

- Anaerobic bacterium
- Not normal intestinal bacterium
- Fecal-oral spread
- Forms spores that persist
- Toxins produce colitis
  - Diarrhea
  - More severe disease, death
- 2 steps to infection
  - Antibiotics result in vulnerability
  - New acquisition via transmission

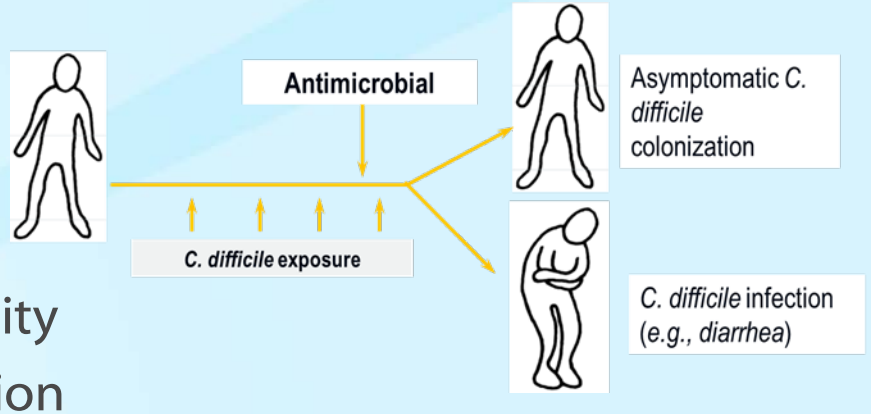
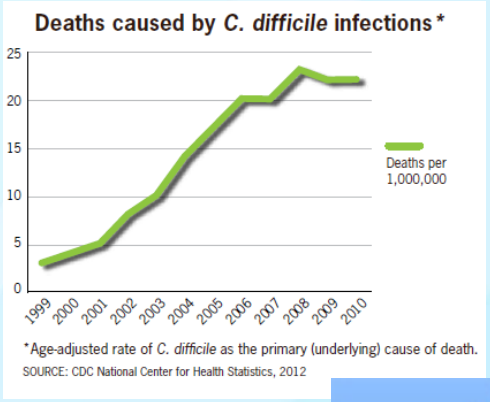
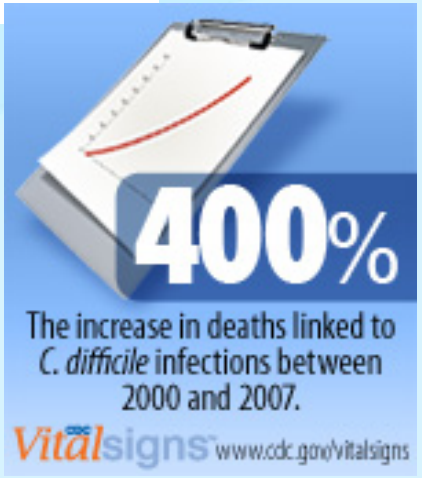


Figure courtesy of D. Gerding and S. Johnson

Clostridium difficile Infections (CDIs) and Deaths Reach and Remain at Historic Highs

- **CDI hospitalizations**
  - Increased 3-fold 2000-2009
- **Deaths linked to CDI**
  - 14,000 in 2007
- **$1 billion in medical costs**
  - CDIs in hospital patients only
- **Epidemic strain**
  - First emerged in 2000
  - Causes more cases and severity





Lucado J, et al, Available at http://www.hcup-us.ahrq.gov/reports/statbriefs/sb124.pdf.

Hall AJ et al.. Presentation at the 49th Annual Meeting of the Infectious Disease Society of America; October 22, 2011; Boston, MA.

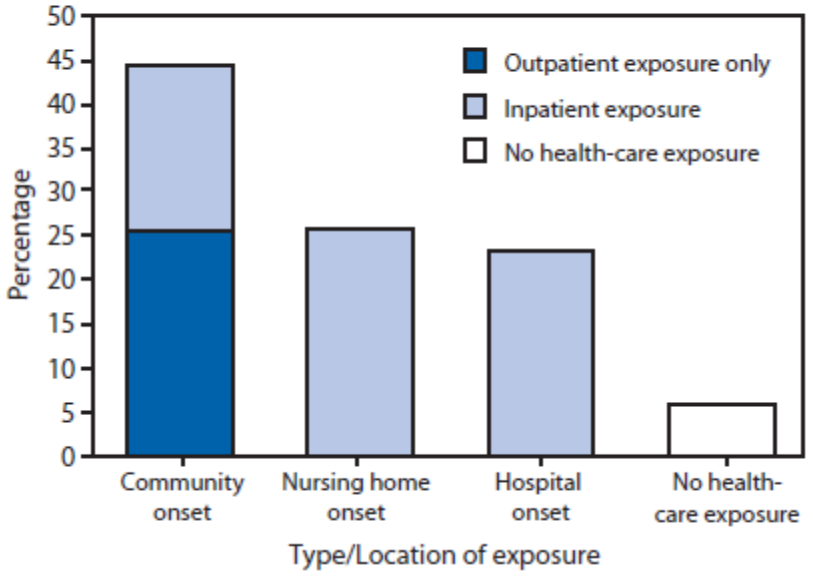
Dubberke ER et al. Clin Infect Dis 2008;46:497–504.

McDonald LC et al. N Engl J Med 2005;353:2433–41.

CDIs Largely Health Care Related: Most Develop Symptoms Outside Hospitals

- **94% health care related**
- **75% of these outside hospitals**
  - Nursing home patients
  - Patients in community
    - Outpatient exposures only
    - Recent inpatient exposure
- **25% hospital inpatients**
- **Post-discharge CDI common**
  - Most potent antibiotics used in hospitals
  - Lasting effect on patients

FIGURE 1. Percentage of *Clostridium difficile* infection (CDI) cases (N = 10,342), by inpatient or outpatient status at time of stool collection and type/location of exposures* — United States, Emerging Infections Program, 2010

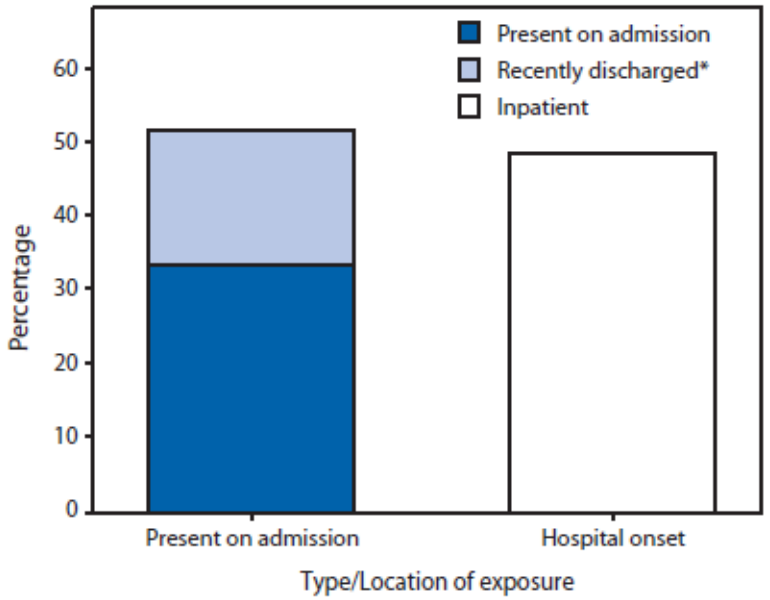


Source: CDC, MMWR;2012;61(Early Release): 1-6

Interdependence of Hospitals and Surrounding Facilities in Preventing CDI

- **52% of the CDIs diagnosed in hospitals are present on admission**
  - 36% (19% overall) recently discharged
- **48% hospital onset**
  - Likely result from inpatient care
- **CDIs present on admission**
  - Source for intra-hospital transmission

FIGURE 2. Percentage of laboratory-identified *Clostridium difficile* infections (N = 42,157), by hospitalization status at time of stool collection and type/location of exposure — United States, National Healthcare Safety Network, 2010

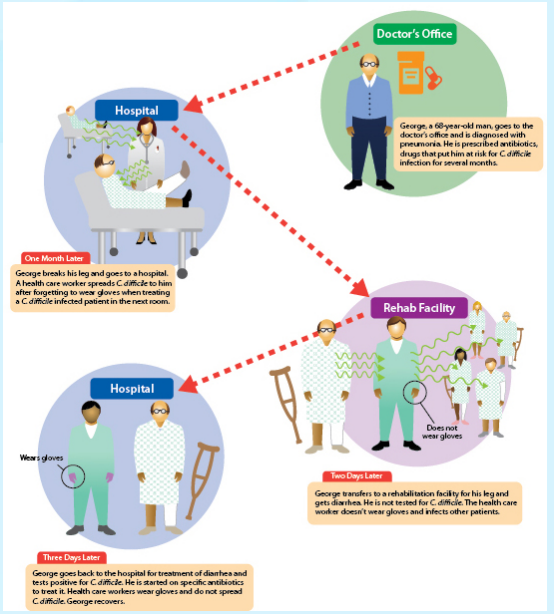


* From reporting hospital during the preceding 4 weeks.

Source: CDC, MMWR;2012;61(Early Release): 1-6

Six Steps to Prevention of CDIs

- Prescribe and use antibiotics carefully
- Focus on an early and reliable diagnosis
- Isolate patients immediately
- Wear gloves and gowns for all contact with patient and patient care environment
- Assure adequate cleaning of the patient care environment, augment with EPA-registered *C. difficile* sporicidal disinfectant
- Notify facilities upon patient transfer



Source: CDC, 2012

Prevention is Possible

- 71 hospitals in hospital-onset CDI prevention programs of three states (IL, MA, NY)
- Engagement of hospital leadership
- Implementation of prevention strategies
- Measurement and feedback of data
- 20% overall reduction in CDIs

What Can Be Done

- **Federal Government**
  - Tracking and reporting
  - Promoting prevention through programs and recommendations
  - Prevention expertise, outbreak and laboratory support

- **States and Communities**
  - Encourage facilities to track and share data using NHSN
  - Develop regional prevention projects across facility types
  - Technical assistance to facilities
  - Standardized patient transfer form

What Can Be Done

- **Health Care Facility Administrators**
  - Support better testing, tracking, and reporting
  - Assure adequate environmental cleaning
  - Notify other facilities on patient transfer
  - Participate in regional prevention efforts

- **Doctors and Nurses**
  - Prescribe antibiotics carefully, take an antibiotic 'time out'
  - Order a *C. difficile* test in appropriate patient population
  - Be aware of infection rates in facility or practice, follow infection control recommendations with every patient

What Can Be Done

- **Patients**
  - Antibiotics can be lifesaving but are not without risk, use only as directed by your doctor
  - Tell your doctor if you have been on antibiotics and you develop diarrhea within a few months
  - Wash your hands after using the bathroom
  - Try to use a separate bathroom if you have diarrhea, or be sure the bathroom is cleaned well if someone with diarrhea has used it

Acknowledgements

- **CDC, NCEZID, Division of Healthcare Quality Promotion**
  - Rosa Herrera
  - Fernanda Lessa
  - Dawn Sievert
  - Nicole Coffin
  - Matt Wise
  - Paul Malpiedi
  - Maggie Dudeck
  - Arjun Srinivasan
  - Scott Fridkin
  - Abbigail Tumpey
  - Denise Cardo
- **CDC, Office of the Director**
  - Richard Schieber
  - Lynn Sokler

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Using a Collaborative Intervention Model to Prevent Hospital-Onset *Clostridium difficile* Infection in the New York Metropolitan Region

Brian Koll, MD, FACP, FIDSA
Medical Director and Chief, Infection Prevention
Beth Israel Medical Center, New York, NY
Professor, Clinical Medicine
Albert Einstein College of Medicine, New York, NY
C. difficile Collaborative Chair

Clostridium difficile (*C. difficile*) Collaborative Partners

- Trade association of nearly 250 hospitals and continuing care organizations
- Health services research and philanthropic organization
- Infection prevention demonstration projects
- 47 hospitals
  - 35 submitted sufficient data for analysis
    - 21 (60%) major teaching
    - 13 (37%) non-major teaching
    - 1 (3%) non-teaching

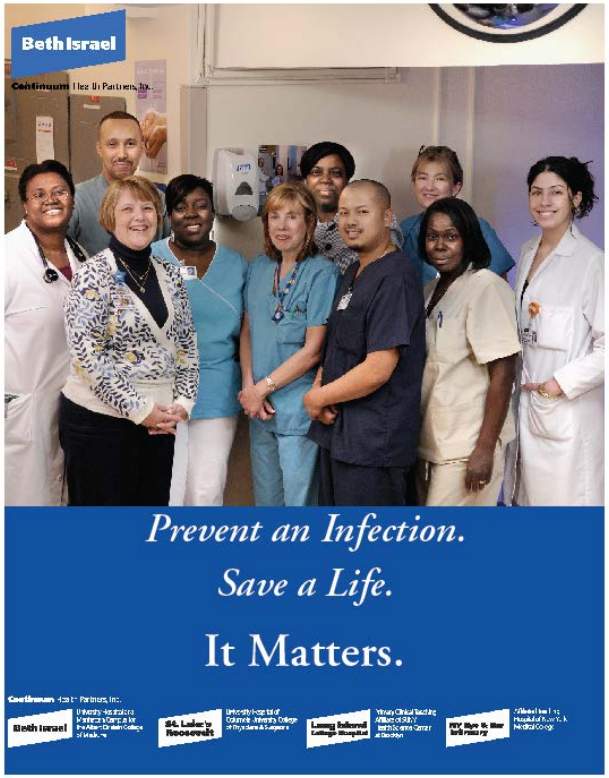
C. difficile Collaborative Model

- Prior model for success – GNYHA/UHF CLABSI Collaborative*
- Steering committee
- Physician expert chair

- Learning sessions
- Monthly teleconferences
- Site visits
- Timely feedback of data

- Support from executive leadership
- Interdisciplinary teamwork

- Data definitions**
- Data collection
- Prevention bundle***



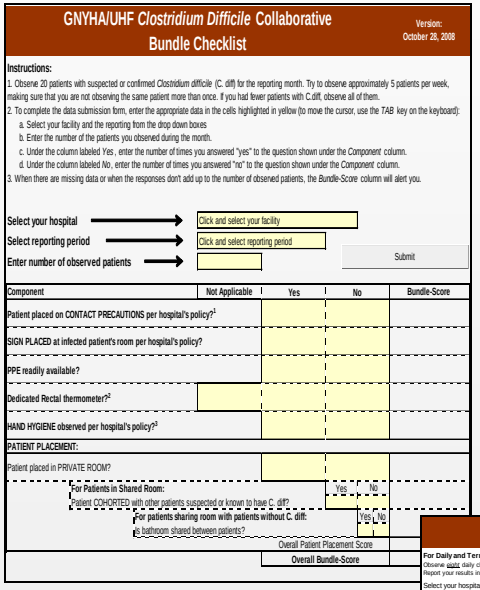
*Koll B, Straub T, Jalon H, Block R, Heller K, Ruiz R. *The JC Journal on Quality and Patient Safety*. 2008; 34(12):713-723

**Based on definitions from: McDonald LC, Coignard B, Dubberke E, Song X, Horan T, Kutty PK. *Infect Control Hosp Epidemiol*. 2007; 28(2):140-145

***Antimicrobial Stewardship was not the focus of the *C. difficile* Collaborative.

C. difficile Prevention Bundle*

- Soap and water for hand hygiene
- Contact precautions upon suspicion of *C. difficile*
- Monitor signage and availability of PPE
- Dedicated rectal thermometers
- Patient placement hierarchy
  - Private room vs. cohorting vs. shared
- Bathroom hierarchy/prioritization
  - Dedicated vs. shared vs. commode
- Transport precautions
- Environmental cleaning
  - Hypochlorite-based disinfectant
  - Checklist for daily and terminal cleaning


GNYHA/UHF *Clostridium Difficile* Collaborative
Bundle Checklist

Version: October 28, 2008

Instructions:

1. Observe 20 patients with suspected or confirmed *Clostridium difficile* (C. diff) for the reporting month. Try to observe approximately 5 patients per week, making sure that you are not observing the same patient more than once. If you had fewer patients with C.diff, observe all of them.
2. To complete the data submission form, enter the appropriate data in the cells highlighted in yellow (to move the cursor, use the *TAB* key on the keyboard):
   a. Select your facility and the reporting from the drop down boxes
   b. Enter the number of the patients you observed during the month.
   c. Under the column labeled Yes , enter the number of times you answered "yes" to the question shown under the *Component* column.
   d. Under the column labeled No , enter the number of times you answered "no" to the question shown under the *Component* column.
3. When there are missing data or when the responses don't add up to the number of observed patients, the *Bundle-Score* column will alert you.

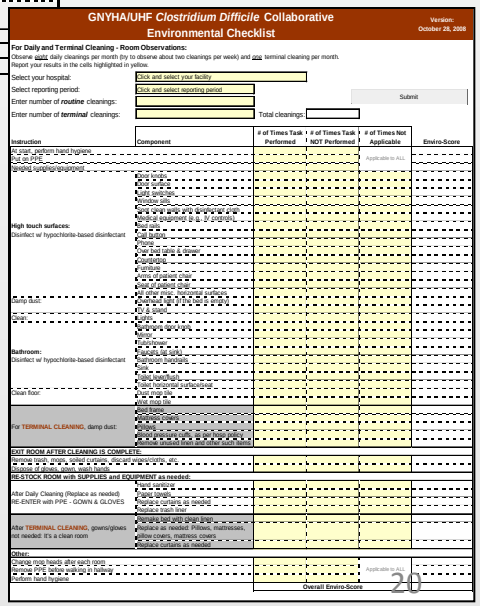
Select your hospital → Click and select your facility

Select reporting period → Click and select reporting period

Enter number of observed patients →

Submit

Component	Not Applicable	Yes	No	Bundle-Score
Patient placed on CONTACT PRECAUTIONS per hospital's policy?[1]				
SIGN PLACED at infected patient's room per hospital's policy?				
PPE readily available?				
Dedicated Rectal thermometer?[2]				
HAND HYGIENE observed per hospital's policy?[3]				
PATIENT PLACEMENT:				
Patient placed in PRIVATE ROOM?				
For Patients in Shared Room: Patient COHORTED with other patients suspected or known to have C. diff?		Yes	No	
For patients sharing room with patients without C. diff: Is bathroom shared between patients?		Yes	No	
Overall Patient Placement Score				
Overall Bundle-Score				


GNYHA/UHF *Clostridium Difficile* Collaborative
Environmental Checklist

Version: October 28, 2008

For Daily and Terminal Cleaning - Room Observations:

Observe *eight* daily cleanings per month (try to observe about two cleanings per week) and *one* terminal cleaning per month.
Report your results in the cells highlighted in yellow.

Select your hospital: Click and select your facility

Select reporting period: Click and select reporting period

Enter number of ***routine*** cleanings:

Enter number of ***terminal*** cleanings: Total cleanings:

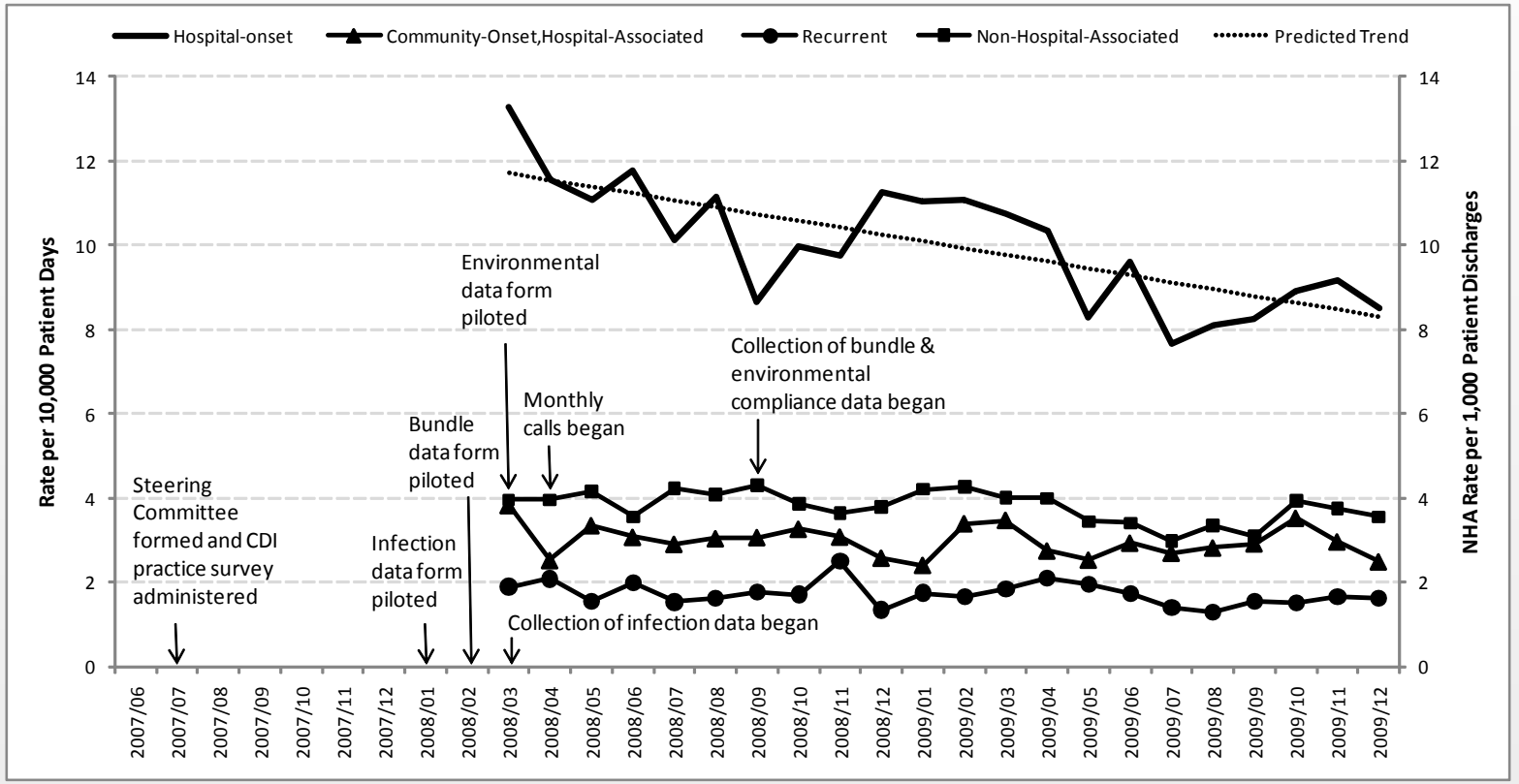
Submit

Instruction	Component	# of Times Task Performed	# of Times Task NOT Performed	# of Times Not Applicable	Enviro-Score
Put on PPE	Applicable to ALL				
Damp dust:					
Floors:					
Bathroom: Disinfect w/ hypochlorite-based disinfectant					
Clean floor:					
For TERMINAL CLEANING, damp dust:					
EXIT ROOM AFTER CLEANING IS COMPLETE:					
RE-STOCK ROOM with SUPPLIES and EQUIPMENT as needed:					
After Daily Cleaning (Replace as needed) RE-ENTER with PPE - GOWN & GLOVES					
After TERMINAL CLEANING, gowns/gloves not needed: it's a clean room					
Other:					
		Overall Enviro-Score			

*Components of the prevention bundle are consistent with CDC's *About Clostridium difficile* FAQs: http://www.cdc.gov/HAI/pdfs/cdiff/Cdiff_tagged.pdf.

Timeline and Results

Figure 1. Collaborative Hospitals' *C. difficile* Rates Over Time



- Mean incidence of Hospital-onset CDI decreased 20% from 10.7 to 8.6 per 10,000 patient days ($p < 0.001$)
- *C. difficile* Prevention Bundle: Mean scores ranged between 77% and 96% compliance
- *C. difficile* Environmental Protocol: Mean scores ranged between 85% and 98% compliance

Lessons Learned and Next Steps

- Lessons learned
  - Regional effort: “Strength in numbers”
  - Focus on “what is controllable”: Reduce variability of infection prevention, environmental and disinfection practices
    - Consistent use and monitoring of infection prevention practice bundles and timely reporting back of data to end users
  - Administrative and clinical senior leadership support
  - “Buy-in” and support of front-line staff
    - Environmental Services
    - Transporters and other ancillary staff
  - Importance of an interdisciplinary “team effort”
    - Teach
    - Monitor and enforce practices
    - Problem-solve
    - Share and spread best practices
- Next Steps
  - GNYHA/UHF Antimicrobial Stewardship Project funded by NYSDOH
    - October 2009 – April 2010; Antimicrobial Stewardship Toolkit available
  - NYSDOH *C. difficile* Collaborative focused on prevention in long term care facilities

C. difficile Collaborative Contacts

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- **New York State Department of Health**
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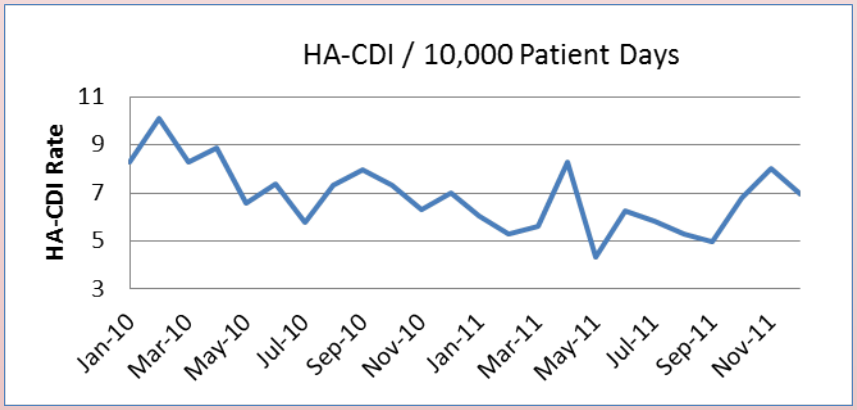
- **Collaborative Chair (from Beth Israel Medical Center)**
  Brian Koll, MD, FACP, FIDSA
  bkoll@chpnet.org
  212-420-2853

Special thanks to the *C. difficile* Collaborative hospital participants, the Steering Committee, and Rachel Stricof, formerly from NYSDOH.

Preventing *C. difficile* in Massachusetts Hospitals with a Mixed Methods Learning Collaborative

Massachusetts Department of Public Health
Massachusetts Coalition for the Prevention of Medical Errors
Funding from CDC through the American Recovery and Reinvestment Act



Program Materials available at www.macoalition.org
For additional information contact: Susanne Salem-Schatz@hcqi.com or Eileen McHale *eileen.mchale@state.ma.us*

MA CDI Prevention Collaborative 2010-2011: Key features

☑ **Statewide partnership** and collaboration

☑ **Multidisciplinary teams** including representatives from infection prevention, quality, clinical leadership, microbiology, pharmacy and environmental services

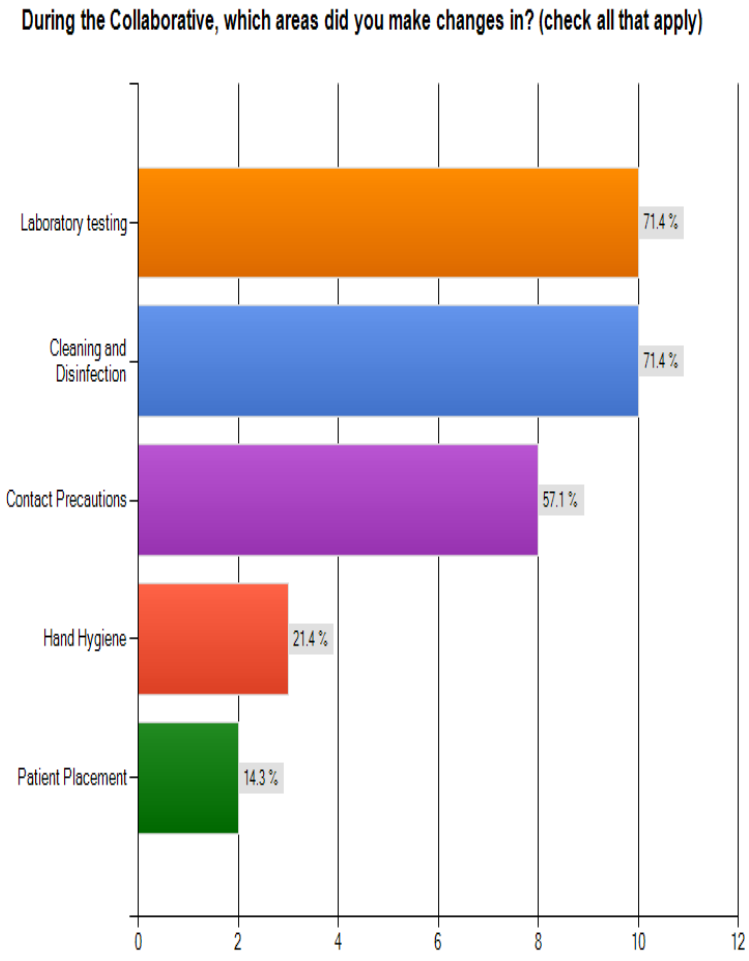
☑ **A common set of practice recommendations** in the areas of surveillance testing, isolation policies, hand hygiene, contact precautions, and environmental cleaning and disinfection; with additional support for antibiotic stewardship

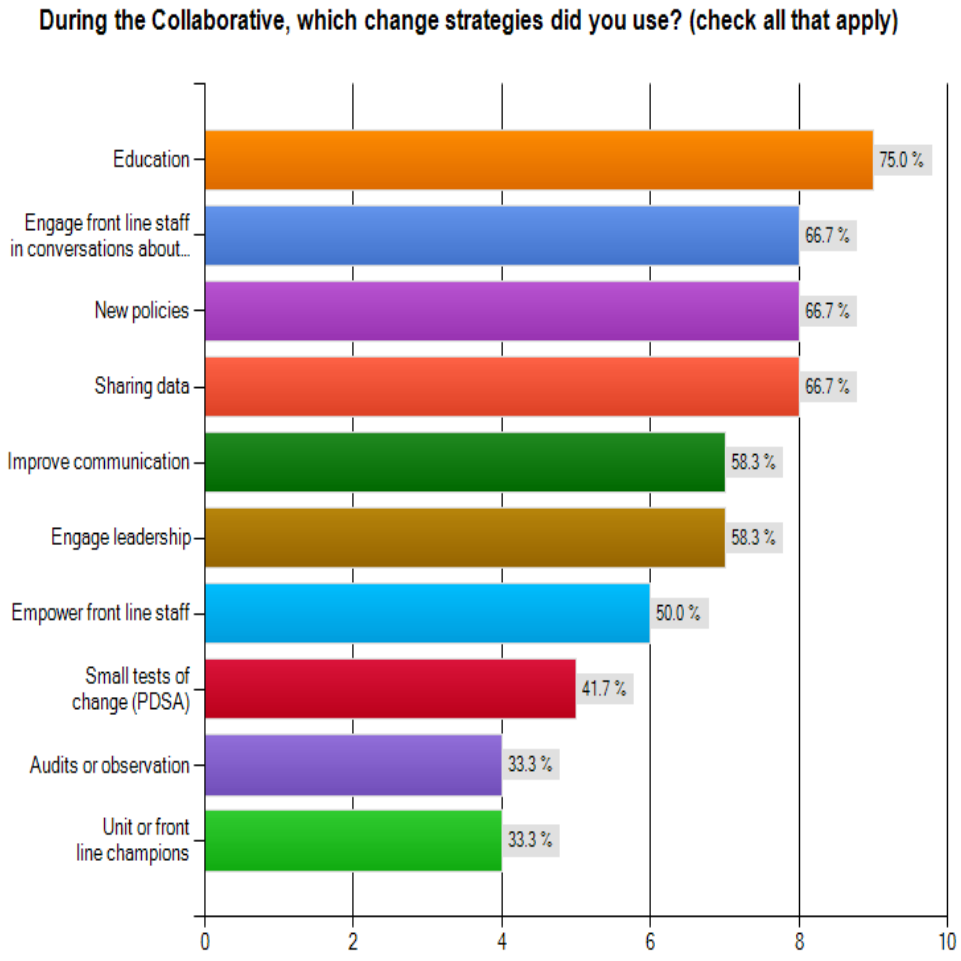
☑ 3 statewide, full day learning and sharing workshops and regional workshops featuring **expert presentations**, highlighting accomplishments of **Collaborative participants**, and teaching /practicing **staff engagement strategies**

☑ **Improvement frameworks** including the **Model for Improvement** (including PDSA, or small tests of change), and **culture change strategies** such as Positive Deviance to support staff engagement

☑ **Common measurement** and reporting tools in Excel based on NHSN HAI definitions

What Hospitals Did and How



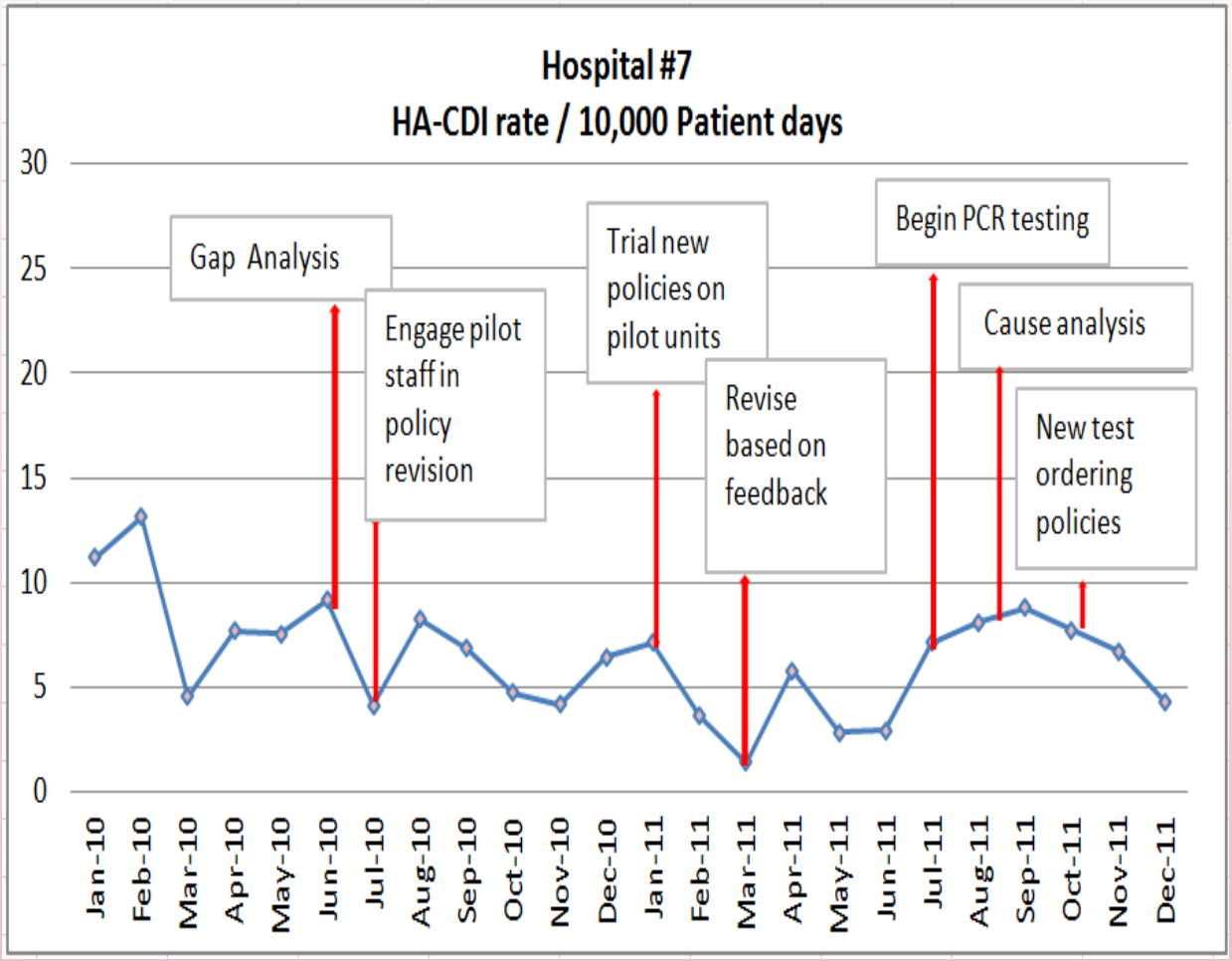


N=17

HA-CDI Reduction in MA Collaborative

CHANGE IN HA-CDI / 10,000 Patient Days			
	Baseline	Last 4 months	% DECREASE
	Jan-April '10	Sept-Dec '11	
CASES	356	259	
PT DAYS	401123	386629	
RATE	8.88	6.70	25%

One of 27 Stories



This team engaged frontline staff in developing and testing new prevention policies, which resulted in decreases over time. Infection rates appeared to increase after June 2011 which coincided with the implementation of PCR testing.

Cause analysis led to the discovery that tests were sometimes ordered without sufficiently ruling out other causes of diarrhea, and the more sensitive test was identifying colonized patients without active infection. Change in ordering policies began in November and it appears their numbers are heading back down.

Lessons Learned

Massachusetts Coalition for the Prevention of Medical Errors

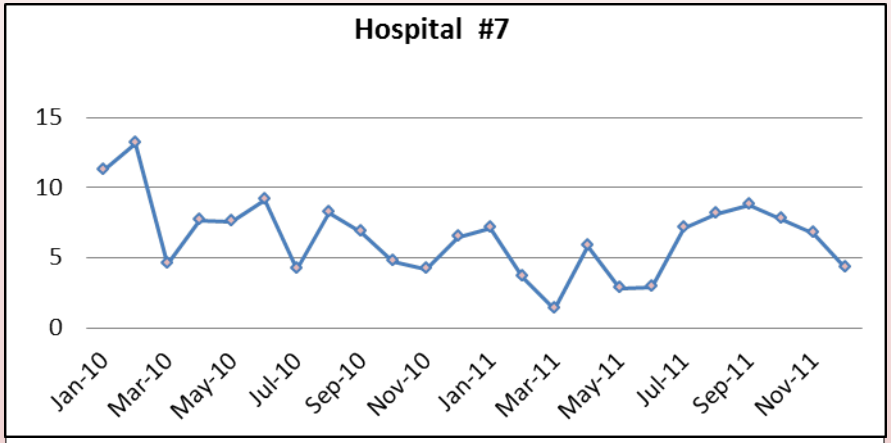
MASSPRO CDC

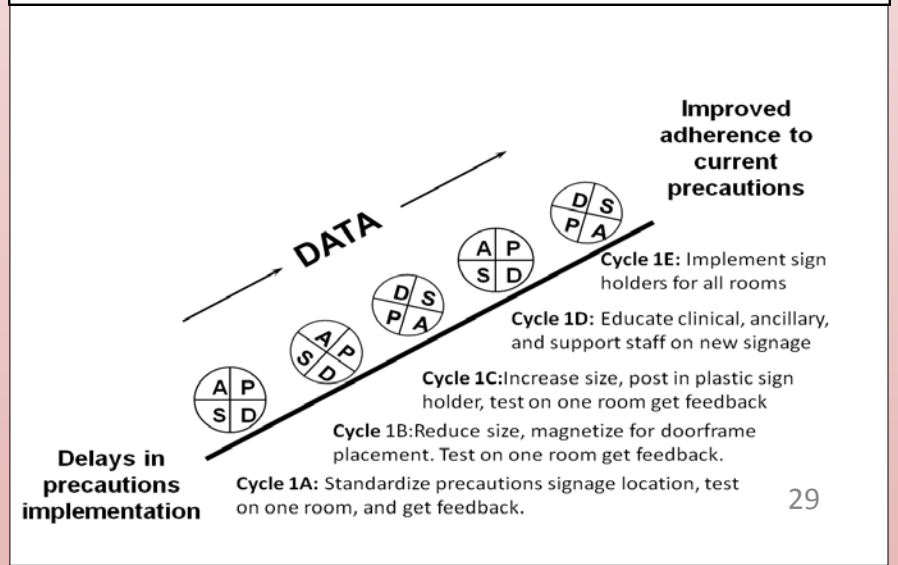
MHA Massachusetts Hospital Association
The leading voice for hospitals.

Improvement requires hard work, time, & is supported by building on long-term relationships and collaboration

Value of shared data to track improvement and solve problems

Value of an improvement framework: aims, measures and small tests of change





Lessons Learned

Engaged front line staff make changes happen!

Adapt changes locally

Balance serious messages with creative approaches to engage staff and support culture of quality

Collaborating to Prevent *Clostridium difficile* Infections in Illinois Hospitals

Chinyere Alu, MPH

March 13, 2012

Illinois Department of PUBLIC HEALTH

Illinois *Clostridium difficile* Prevention Collaborative

- *Clostridium difficile* infections (CDI) rates doubled in Illinois hospitals from 4.5 to 9.2 cases per 1,000 discharges between 1999 and 2009

- Illinois Department of Public Health (IDPH) implemented Collaborative jointly with the Illinois Quality Improvement Organization, IFMC-IL

- Two cohorts
  - Metro Chicago: March 2010–September 2011
    11 hospitals, bed size = 134–739
  - Central/ southern Illinois: October 2010–September 2011
    9 hospitals, bed size = 145–616

Goals

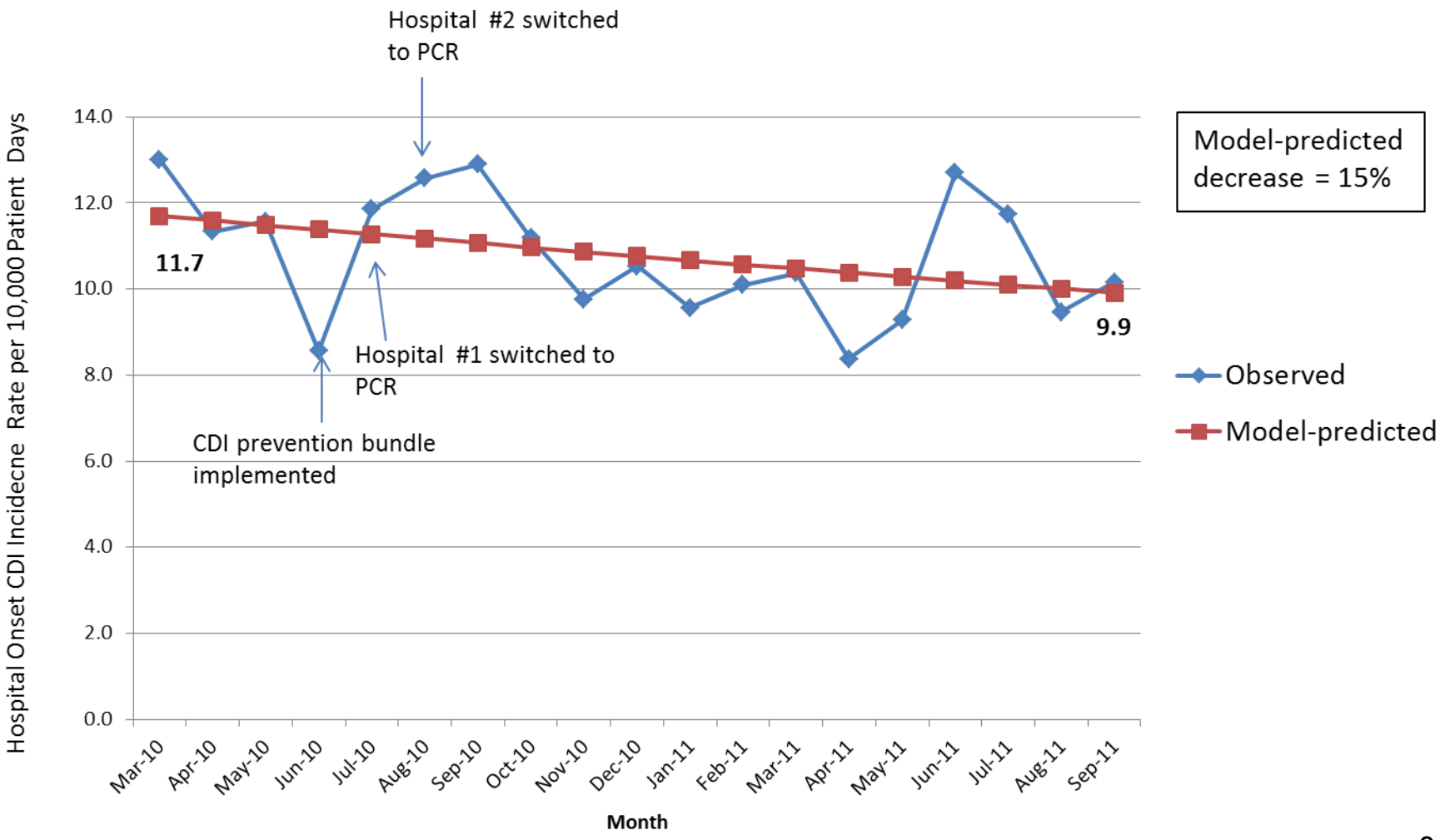
	Target
Hospital onset CDI incidence rate (metro Chicago cohort)	20% decrease
Hospital onset CDI incidence rate (central/southern IL cohort)	15% decrease
Hand hygiene	90% adherence rate
Gown and glove	90% adherence rate
Environmental cleaning	85% adherence rate

Approach

- Leadership support and multidisciplinary teams
- CDI prevention bundle
  - Hand hygiene
  - Contact precautions
  - Laboratory-based alerts
  - Education
  - Environmental cleaning
- Activities
  - Site visits, sharing calls, webinars, in-person meetings
- Data collection
  - National Healthcare Safety Network (NHSN)
  - CDI Prevention Practices Assessment Tool (pre- and post-)
  - Evaluation

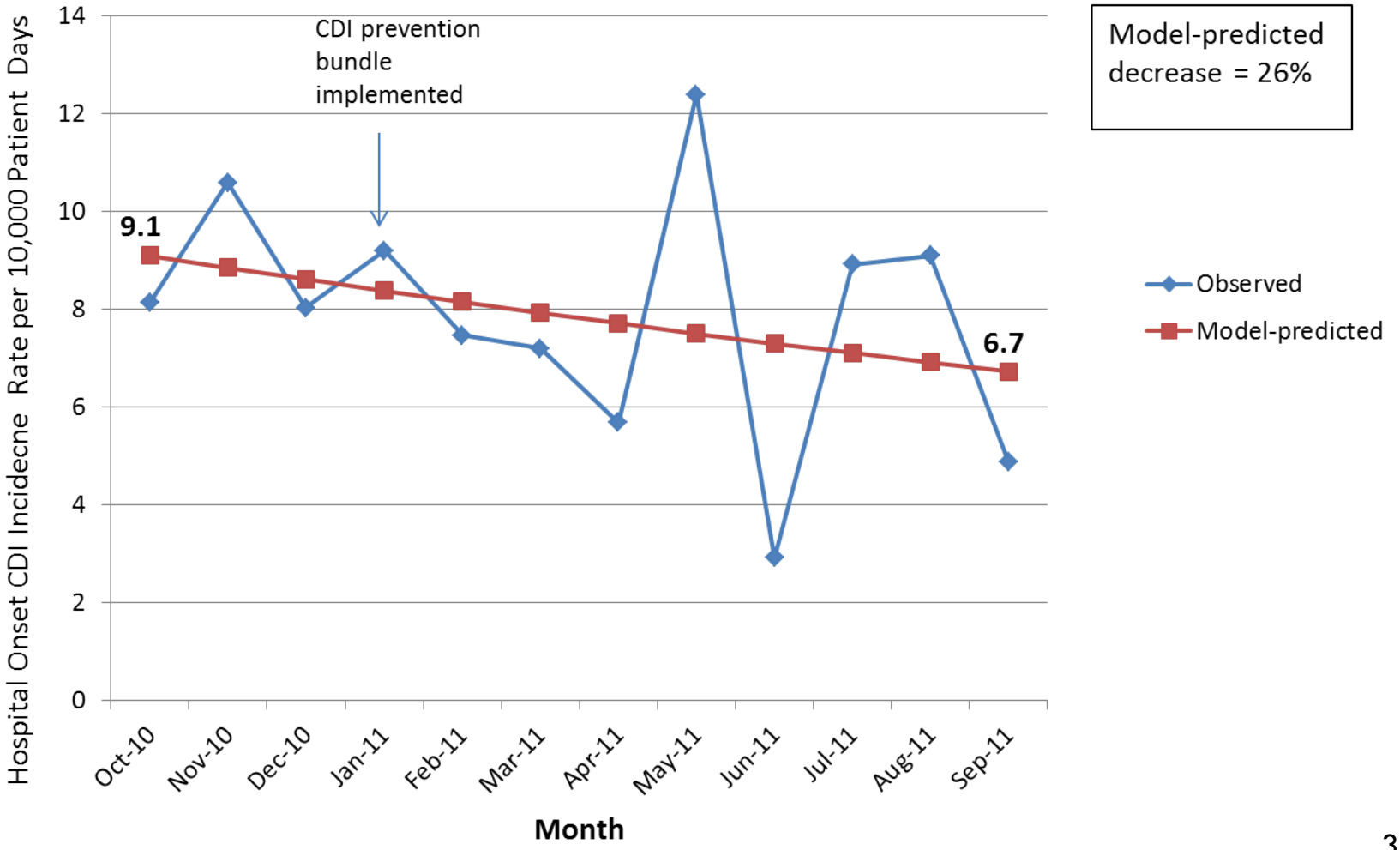
Results

Hospital Onset CDI Rates, March 2010 - September 2011
Metro Chicago Cohort (n=11)



Results

Hospital Onset CDI Rates, March 2010 - September 2011
Central/Southern Illinois Cohort (n=8)



Results

Prevention Practices

- Not regularly reported
- Increase in hand hygiene and gown and glove adherence rates by the end of the Collaborative period
- Average adherence rates
  - Highest for hand hygiene (93%)
  - Lowest for environmental cleaning (78%)

Lessons Learned

- Having multidisciplinary teams is key
  - Production of video, Not Just A Maid Service, to highlight role of environmental service workers in preventing CDI http://www.notjustamaidservice.com
- Having leadership support (hospital and IDPH) is important
- Need to consider how to sustain and further success beyond the collaborative period

Acknowledgments

- Illinois CDI Prevention Collaborative Hospitals
- Brandi Jordan
- IDPH team (Lauren Gallagher, Kathie Doliszny, Barbara Fischer, Erica Abu-Ghallous, Mary Driscoll)
- IFMC-IL
- CDC's DHQP (Cliff McDonald, Jason Snow, Katherine Ellingson)

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***Vital Signs* interactive buttons and banners:**

http://www.cdc.gov/vitalsigns/SocialMedia.html

Public Health Practice Stories from the Field

- Stories about the implementation of public health practices in the field

www.cdc.gov/stltpublichealth/phpracticestories

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OSTLTSFeedback@cdc.gov

Please mark your calendars for the next **OSTLTS Town Hall Teleconference**:

April 17, 2012

2:00 pm – 3:00 pm (EDT)

For more information, please contact Centers for Disease Control and Prevention.

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